Industry Best Practices to Control Blood Lead

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October 20, 2017

- The views expressed herein reflect the views of Battery Council International. Unless expressly stated otherwise, these views do not necessarily represent those of EnerSys.

Lead Battery Industry Expertise

- >85% of lead consumption in USA (USGS.gov)
- Approximately 20,000 lead-exposed workers nationwide
- Industry Trade Association Initiatives
  - Voluntary Blood Lead Reduction Program
  - Global and regional EHS training conferences
  - Best practice sharing via BCI Committees
  - Educational materials
  - Equipment design improvement initiative to reduce lead releases

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Battery Industry Voluntary Program

- 1997 – BCI & OSHA Program
  - BCI & OSHA entered into 5-year voluntary agreement
    - Reduced medical removal level from 50 (µg/100g) to 40 µg/100g
    - Return reduced from 40 to 35 µg/100g
- BCI, ILA & EUROBAT Voluntary Program Goals
  - 2013: All employees below 30 µg/dL by end of 2016
  - 2017: (1) All employees below 25 µg/dL by end of 2019
    (2) All employees below 20 µg/dL by end of 2025

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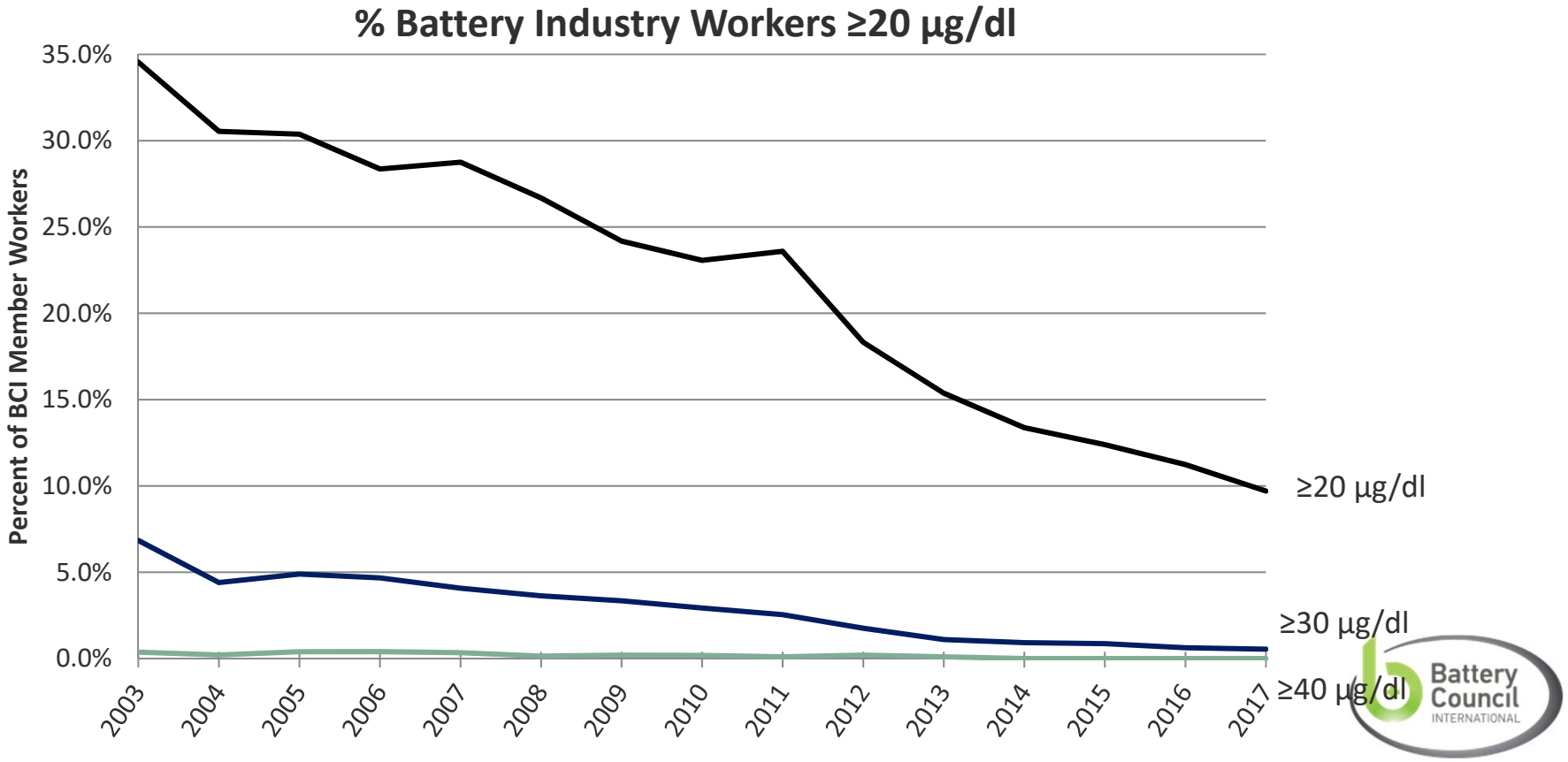
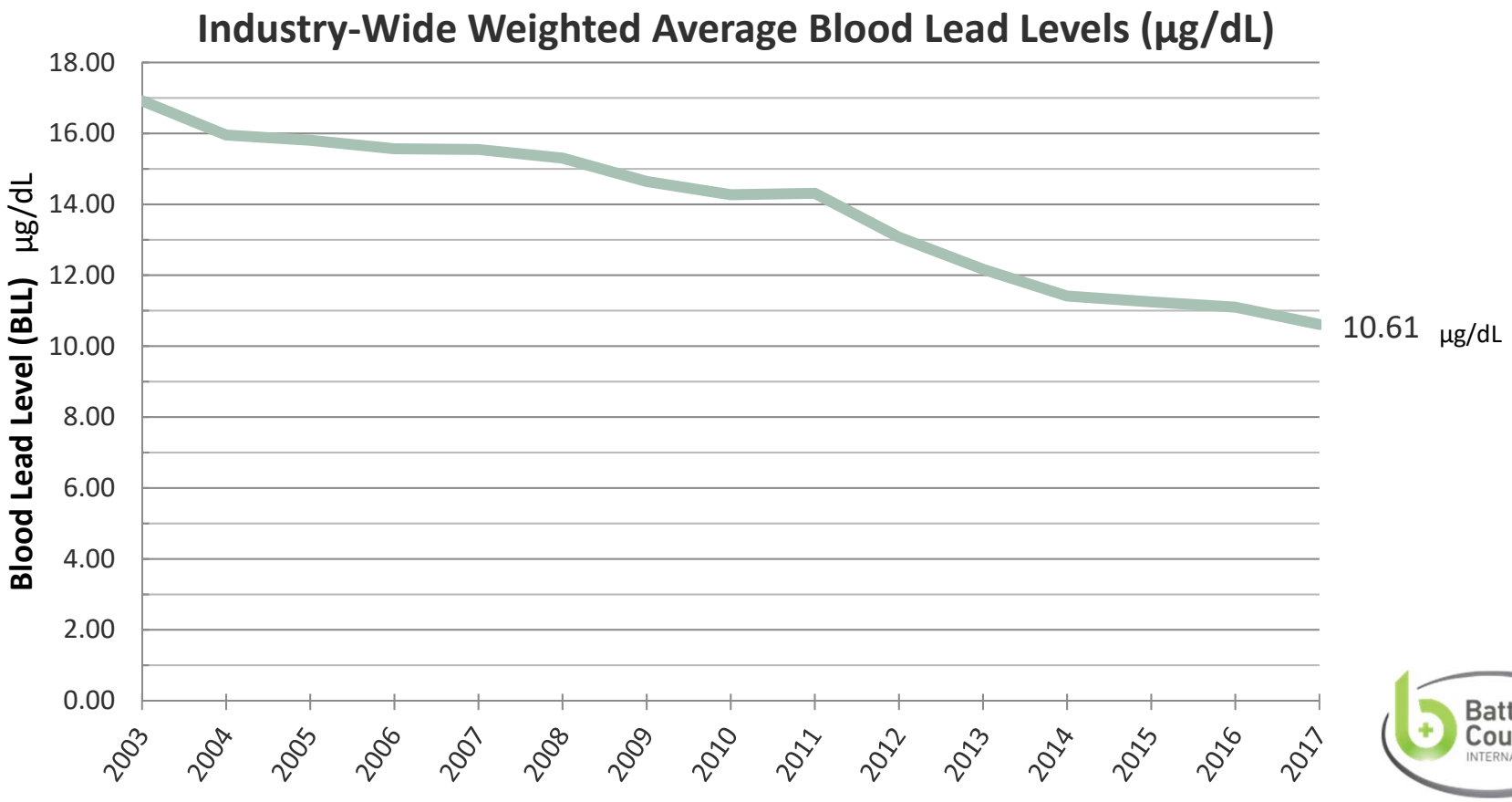
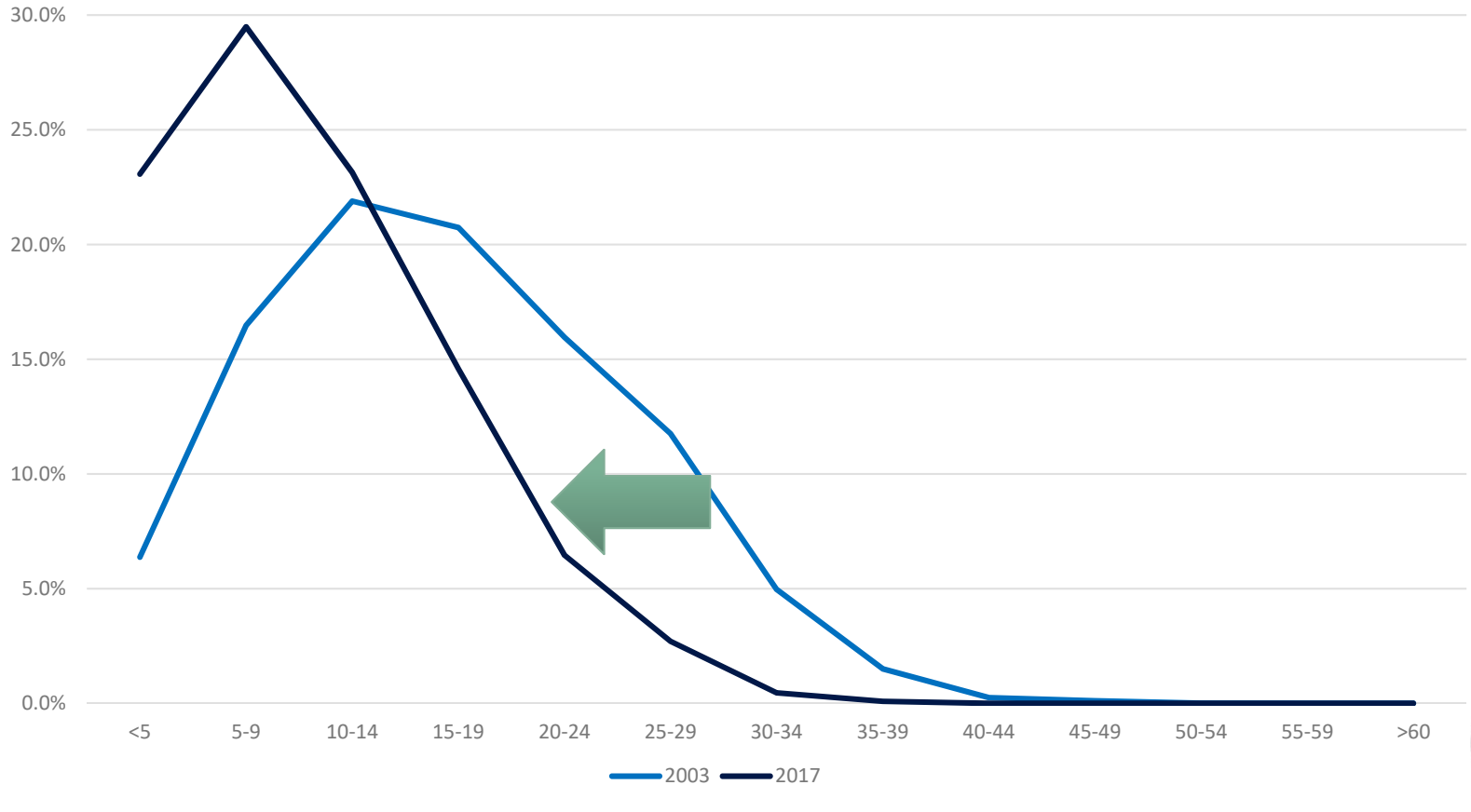
Voluntary Blood Lead Reduction Program



Voluntary Blood Lead Reduction Program



Voluntary Blood Lead Reduction Program



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General Overview

- If goal is to reduce blood leads, then change blood lead levels and allow industry to determine how to achieve goals.

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Key Issues with L&I Discussion Draft

- Focus on PEL reductions is misplaced
- Medical Removal Provisions
  - Removal at lower level should be averaged, like existing regulation
  - Should have return to work at 15 ug/dL
- New Industries Must Comply – Keep it Simple!

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Key Issues with L&I Discussion Draft (continued)

- Costs for:
  - Showers/locker room, process flows, building materials, wastewater controls, permitting
  - Uniforms and cleaning service
  - Training, medical testing, administrative, records management, medical doctor
  - Paying employees for donning and doffing PPE and showers

PEL / Air Lead Reductions

- BCI experience shows that PEL / Air Lead reductions are:
  - (1) Not the most effective way to reduce BLLs
  - (2) The most expensive option – well beyond the economic feasibility of most companies

How to Control Air Lead Levels

- CAPEX costs
  - Exhaust hoods over/around every work station
  - Duct work/Bag house/Ventilation design
  - Stormwater controls

- Operating costs
  - Electricity
  - Preventative maintenance, filter replacement, worker exposures, permitting, compliance stack testing, etc…

PEL / Air Lead Reductions

- California PEL Proposal
  - 10 µg/m^3 facility wide
- BCI analysis showed that 10 µg/m^3 would consume 40% of California industry profits for 10 years – for just 6 work areas
  - 4x U.S. OSHA's maximum rule-of-thumb of 10% of profits
- Washington proposal of 20 µg/m^3 would consume similar levels of investment

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Economic Feasibility Solution

- Secondary Engineering Control Air Limits ("SECALs")
  - Modeled on OSHA Cadmium standard
  - Employer establishes signed and demarcated SECAL areas
  - Within SECAL area, SECAL sets air-lead requirement higher than PEL
    - For continuity, should be set at today's PEL: 50 $\mu g/m^3$
  - Respiratory PPE mandatory within SECAL area (above PEL)
- Recommendations based on our learnings:
  - Picking SECAL work-areas by regulation is cumbersome and currently single-industry
  - SECALs should be available to all industries in all areas

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Feasible Practices That Work

- “Like raising children and making them brush their teeth and wash their hands before eating!” I call it parenting!
- Management Team Commitment
  - Senior management 1 on 1 counseling
- New Hires
  - Up to monthly sampling first 4 months, monthly counseling
  - Pair with experienced buddy/mentor
- Problem Employees
  - Re-train employee/supervisor/manager
  - More frequent testing/discipline

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Feasible Practices (Continued)

- Training
  - Increase frequency
  - Washing
- D-Lead Qualitative Sampling
  - Hands/body – validate contamination and cleaning
  - Surfaces – validate contamination and cleaning in clean and dirty areas
  - Quantitative sampling only provides tool for enforcement, limited, if any value to industry beyond existing qualitative capabilities
    - Expensive; slow results; false positives, inconsistence pressure applied during wipe sampling, many plastics still contain lead, …
- Respirators – Provide protection from air lead exposures

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Feasible Practices (Continued)

- Personal Protective Equipment (PPE)
  - Primary and secondary gloves (nitrile)
  - Barrier Crèmes
  - Training – Don and Doff PPE
  - Uniforms – Remove/close pockets
- Housekeeping - maintain areas clean

Feasible Practices (Continued)

- Work Practices
  - Train employees regularly on proper manufacturing procedures and lead controls at workstations
- Eliminate smoking
- Control overtime in leaded areas – workers get tired and sloppy
- Material Handling – eliminate where possible/automate

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Feasible Practices (Continued)

- Sharing Industry Best Practices
- Industry Lead Working Groups
- Lead Task Working Groups Within Companies
- OSHA E-Tool Manuals
  - Battery Manufacturing
  - Secondary Lead Smelter

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